

# AD ASTRA...

THE JOURNAL OF  
THE ATARI MICROCOMPUTER NET  
AMATEUR RADIO OPERATOR USERS' GROUP



# Ad Astra...

THE ATARI MICROCOMPUTER NET USERS' GROUP  
NET COORDINATOR,


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Ad Astra...

Volume 1, Number 3

The ATARI Microcomputer Net is a non-profit organization of amateur radio operators and short-wave listeners who have a common interest—exchanging information on applications, programming and operation of the ATARI Microcomputer System. With these goals in mind, all amateur radio operators and SWLs are invited to join in the Net operations.

In order to receive this newsletter on a regular basis, members are asked to help offset the cost of printing and mailing by sending an annual donation of \$10.00 to the above address. Those who have sent in a donation will find an expiration code on the mailing label. If you have no code on your label, then you have received a copy funded out of the editor's pocket! A free copy of this newsletter will be sent to all new net members and anyone making an inquiry about net operations.

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## Editorial

The Atari Micro-Net is really growing! A large expansion period is good for us all, but requires a lot of paperwork and disk-shuffling! I have attempted to answer all mail on the day that it is received, but a couple of times, I must admit, I have slipped a letter back into the heap for a day or two. I hope there has been no inconvenience to any of the members.

Our nets have been very productive and a lot of information has been exchanged! I want to thank each of you for your help in making the nets a success! Band conditions play a large role in the success of the nets, and even though we have had our share of solar-flares and generally poor operating conditions, a few times we have had very good all-around propagation. We are on the upswing for 20 meter band conditions and the institution of the new regional nets will augment our national net to the point that every member of the net will be able to participate at least once a week!

I want to thank all of you who have sent me cards and letters expressing thanks for the work I have done to get the ATARI Micro-Net rolling. Actually, no thanks are needed—you see, it's a labor of love! I might also add that the production of "Ad Astra..." falls into the same category! It is indeed a lot of work to type up each of these pages, even with the help of the ATARI and Randy Agee's letter-processor! As I see each page unfold on the printer, the dread that I usually feel starts to melt away!

I hope you all like this issue! There are some very good articles and projects! Let me know what you think!  
JMc WD8BNG

# NEWS

## NEW NETS NEW NETS NEW NETS!!!

It is with great Pleasure that I announce the first two of our local/regional versions of the ATARI Microcomputer Network!

The local net is in the Chicago, Illinois area. Officially known as the Chicago Area ATARI Microcomputer Net, the net Presently meets simultaneously with the National Net at 1600Z on Sundays. The frequency is on the two meter band in the FM mode, 147.57 Mhz. A secondary date/time is Friday and Saturday evenings at 9 P.m. local time. Net manager is Dennis Erickson, WA9FBC, and his assistant is George Curtis, K9GQ. The 147.57 Mhz. frequency is also monitored in the evenings during the week. If you would like to contact Dennis to learn more about the local net, call him at (312) 833-9258. (By the way, Dennis says that holding the net at the same time as the National Net allows them to talk over things that are brought up on the National Net and perhaps interject new information to the National Net check-ins.

Our second net announcement is of a Regional Net in and around California. The Net Manager is Don Moon, N6FTR, 2474 Coolidge Ave., Los Angeles, CA 90064. The net Plans are not finalized yet, but the working band is expected to be 40 meters. We have many members in this region and I urge all of you to contact Don to help him establish this very important Regional Net.

I would like to see Regional Nets established in all sections of the country. If you would like to become a regional Net Manager, Please write to WDSBNG and receive a net managers' kit to help get your area talking about the ATARI Computer system! TNX Jack, WDSBNG

## HINTS AND TIPS FROM MEMBERS!

From Randy A9ee, WB4BZX

If you are using a 410 recorder and have been loosing some Programs with an ERROR 143 AT LINE 0, you are most likely not removing the tape from the cassette after loading in your Program. If you forget to release the Play button the Pressure of the Pinch roller against the capstain drive will make a "dent" in the tape that will remain. This dent will skip over the Playback head and data will be lost causing the Program to crash. Always Press STOP after loading. Also note that the lid on the 410 is rather fragile. If you don't catch the lid when you Press the STOP/EJ, you will eventually end up with a broken lid hinge. The bad thing here is that ATARI will not sell you the lid direct. You have to send the 410 to them for service. Maybe you have a local authorized service center that will do better, I don't.

## NO DAISY PROBLEMS

by Scott Persson, WB0QPP

In the second issue of "Ad Astra...", it seems that Bob Lambeck, WDSIWT, is having Problems when he connects his 820 Printer into the daisy chain. I have the 820 Printer and have experienced no Problems when it is chained. I can only suggest that he change the Position of the Printer in the chain. If this does nothing, he has a faulty Printer and/or data line.

## WOBBY CARDS?

by Scott Persson, WB0QPP

If you were one of the first on the block to buy an ATARI micro, then look inside your memory compartment and check to see that you

have the small Plastic inserts that keep your memory boards from moving back and forth. I did not receive these brown Plastic "card stabilizers" with my '800. It is quite important that you have these because your memory boards may move back and forth and sooner or later this movement will result in one or more poor board connections. In time, this will cause your machine to crash at the most inconvenient times. If you need these stabilizers, call your regional ATARI service center and explain what you need. I got mine free and I feel much more secure.

REV. "A" vs. REV. "B"

By Scott Persson, WB0QPP

During the first year of ATARI computer sales, the version of the operating system in use was revision "A". Currently, in addition to getting GTIA, you will get OS revision "B". The only major difference in the operating systems is that the newer one vectors POKEY timer 4 where the rev. "A" did not.

MORE ON "A" & "B"

by Stephen Lewis, WB7TFZ

An idea that I have about the "A" & "B" system chips is to put a switch on the chip select line so that either system could be used. This same technique was used very successfully on the Sinclair ZX-80

ALSO MORE ON THE DAISY CHAIN

by Stephen Lewis, WB7TFZ

Daisy chaining Peripherals on the serial Port of the ATARI is very simple and has only a few rules. Each device on the Port acts independantly of other devices on the buss. The only time there will be a Problem is when

two devices have the same device code. The 822, 820, 810, 410 and the microconnection do not require the 850 interface. These devices may be connected in any order as long as the cassette is last. Devices with the same codes can be Placed in three Groups- Printers: 820, 822, 825 or any Printer on the Parallel Port - the disk drives which should not be set up or have the same number- the last Group is RS-232 Port 1 and the microconnection. All of these devices can be connected to the computer at the same time as long as only one of each Group is turned on. Due to the fact that longer lines and more connections cause RFI and data errors, it is recommended that the faster devices be first in line. So if you're getting errors, move that device closer to the computer (electrically). You don't have to purchase the 850 interface to use or operate any device connecting to the ATARI serial Port. If your local computer store says differently, they are handing you a line!

NATIONAL NET TIME & FREQUENCY

Sundays....1600 Z.....14.325 Mhz.

Also for a short period after the 20 meter net, there will be an exchange on 7.235 Mhz. All frequencys + or - QRM.

\*\*\* NEXT ISSUE \*\*\*

DUAL-PRINTER SWITCH  
HOMEBREW GAME PADDLES  
ADAPTING THE DT-600 TU FOR "HAMSOFT"  
& LOTS MORE!

LET'S SEE YOUR ARTICLES AND IDEAS!



## A RTTY/CW INTERFACE

by Don Page, WD4HPL and M.L. Sproul, W5UGQ

This article describes a computer interface for receiving and transmitting RTTY and CW. The interface was designed to be used with the ATARI Computer using the KANTRONICS firmware, however, the interface can be used with other computer systems with little or no modification.

### Circuit Description

The interface consists of four function blocks:

- RTTY Receive
- RTTY Transmit
- CW Receive
- Control, including CW transmit

The RTTY receive block is comprised of IC1, IC3A, IC3B, and IC6. IC6A is an op amp operating as a limiter. That is, for an input signal with varying amplitude, the output of the limiter will be of constant amplitude. In this case, the output will be a clipped sine wave or a square wave depending on the input level. The output of the limiter is fed to IC1B which is configured as an active filter. The active filter is designed to pass the standard RTTY audio tones of 2125 and 2295 Hz. The output of the active filter drives the tuning meter and IC6, the RTTY demodulator. IC6 is an EXAR 2211 PLL device. The component values associated with the 2211 are the values recommended by EXAR for the demodulation of the AFSK data at speeds up to 300 baud. For further details on the 2211, see the application notes available from EXAR.

The demodulated data from the 2211 is fed to the input of IC3B, an open collector NOR gate. The output of IC3B feeds IC3A. The

demodulated data at TTL level can be selected at the output of either IC3B or IC3A. The normal output (2125 Hz = logic "1") is selected at the output of IC3A. The reversed output (2125 Hz = logic "0") is selected at the output of IC3B. A light emitting diode (LED) is connected to the data output line to provide a visual indication as the data is received. The LED will be off for a logic "1" (MARK) signal and on for a logic "0" (SPACE) signal. The data output to the computer is a TTL signal with the normal or reverse sense selected by switch S1A.

The RTTY transmit block is comprised of IC7, IC5, and IC3D. IC7 is an EXAR 2206 function generator that will provide a sine wave output. The output frequency is determined by a capacitor-resistor combination. The 2206 has the additional capability of selection of a second output frequency by the logic level that is applied to the control line. With this capability, a simple AFSK generator can be built. The application of a logic "1" to the control pin produces a 2125 Hz output and a logic "0" will produce a 2295 Hz output. The logic to select the output frequency of the 2206 is dictated by a peculiarity of the Kantronics firmware. The Kantronics Program provides for the capability for CW identification in the RTTY mode. However, the identification is via CW keying of the transmitter rather than the usual AFSK. This can be resolved by the use of a NOR gate to produce an AFSK output from the 2206 for either CW or RTTY. IC3D inverts the signal applied to the 2206 through switch S1B to produce normal (MARK = 2125 Hz) or reversed (MARK = 2295 Hz) AFSK. The AFSK output of the 2206 is fed to the microphone input of the transmitter.

## Alignment

The CW receive block is comprised of IC2, IC4, and IC5B. The function of IC2 is similar to that of IC1, that is, a limiter followed by an active filter. In this case, the active filter is designed to pass approximately 650 Hz. The output of the active filter is integrated by a capacitor-resistor combination which is fed to IC4A, a Schmitt trigger. The output of IC4 is further integrated and fed to IC4B, also a Schmitt trigger. The output of IC4B is fed to IC5B which inverts the signal and provides a TTL signal to the ATARI. A LED is connected to the output of IC5B to give a visual indication of the received CW. The combination of the active filter and the Schmitt triggers provide a very narrow CW band pass and excellent recovered CW. The circuit has been used for the reception of computer generated CW up to 90 WPM which is near the limit of the Kantronics Program.

The control block of the interface consists of Q1, IC3A, and Q2. Q1 permits computer control of the PTT circuit of the transmitter. IC3A inverts the PTT signal from the computer and provides the base drive to Q1. Q2 is used to interface the ATARI to the CW keying of the transmitter. (A Kenwood TS-520 was used in the development of this circuit) Since the keying of the TS-520 requires the keying of an approximately -60 volt line, the emitter biased configuration was used for Q2 to provide reliable keying. On-the-air tests have been conducted with excellent results up to 90 WPM.

The remaining element of the control block is the 7805 regulator which provides the regulated 5 volts for IC3, IC4, and IC5.

The alignment of the interface requires the use of a frequency counter and either an audio frequency generator or a receiver.

RTTY Receive:

1. Turn on the Power to the interface.
2. Connect an audio source to the input of the RTTY receive block.
3. Adjust the audio source to 2125 Hz.
4. Adjust R1 for maximum meter reading.
5. Place S1 in the "NORMAL" position.
6. Observe the RTTY data LED:

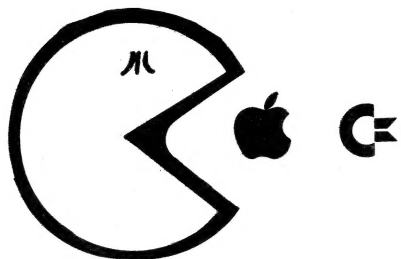
- a. If the LED is lighted, adjust R3 until the LED goes out.
- b. If the LED is out, adjust R3 until the LED is lit then adjust R3 until the LED goes out.

This step adjusts the 2211 to approximately the correct operating point.

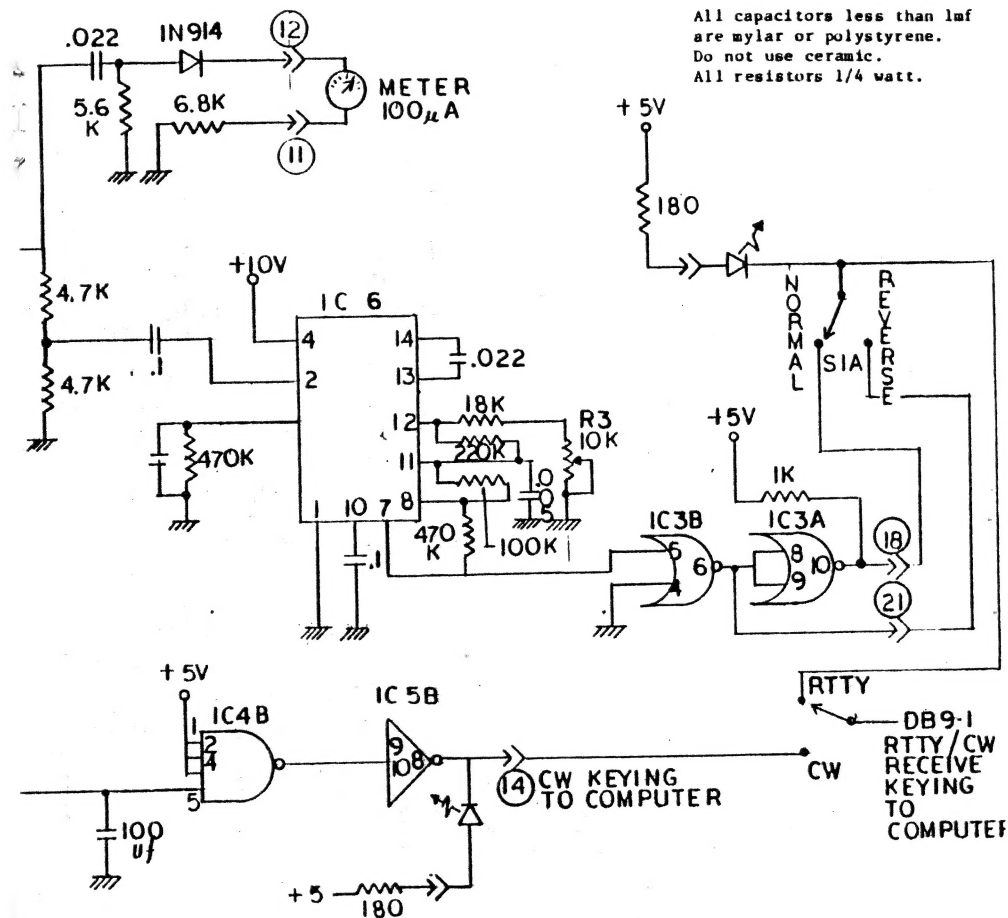
7. Adjust the audio source to 2295 Hz.
8. The RTTY data LED should now be lighted. If not, adjust R3 until the LED lights.
9. Repeat steps 3, 6, 7, and 8 until the LED is out for 2125 Hz and lighted for 2295 Hz.
10. Connect the interface to a receiver and tune in a strong RTTY signal in one of the amateur bands that is free of any interference. Use the lower sideband position. Adjust the receiver tuning for maximum indication of the tuning meter. The RTTY data LED should be flashing on in step with the keying of the received signal. If not, carefully adjust the tuning of the receiver until the LED flashes in step with the signal. Adjust R1 for maximum indication. Tuning of RTTY signals should now coincide with the point where the LED flashes in step with the signal. The LED should be off when no data is being sent, that is a steady tone.
11. At this point, it is assumed that the computer and a RTTY receiving program are available.

cont.



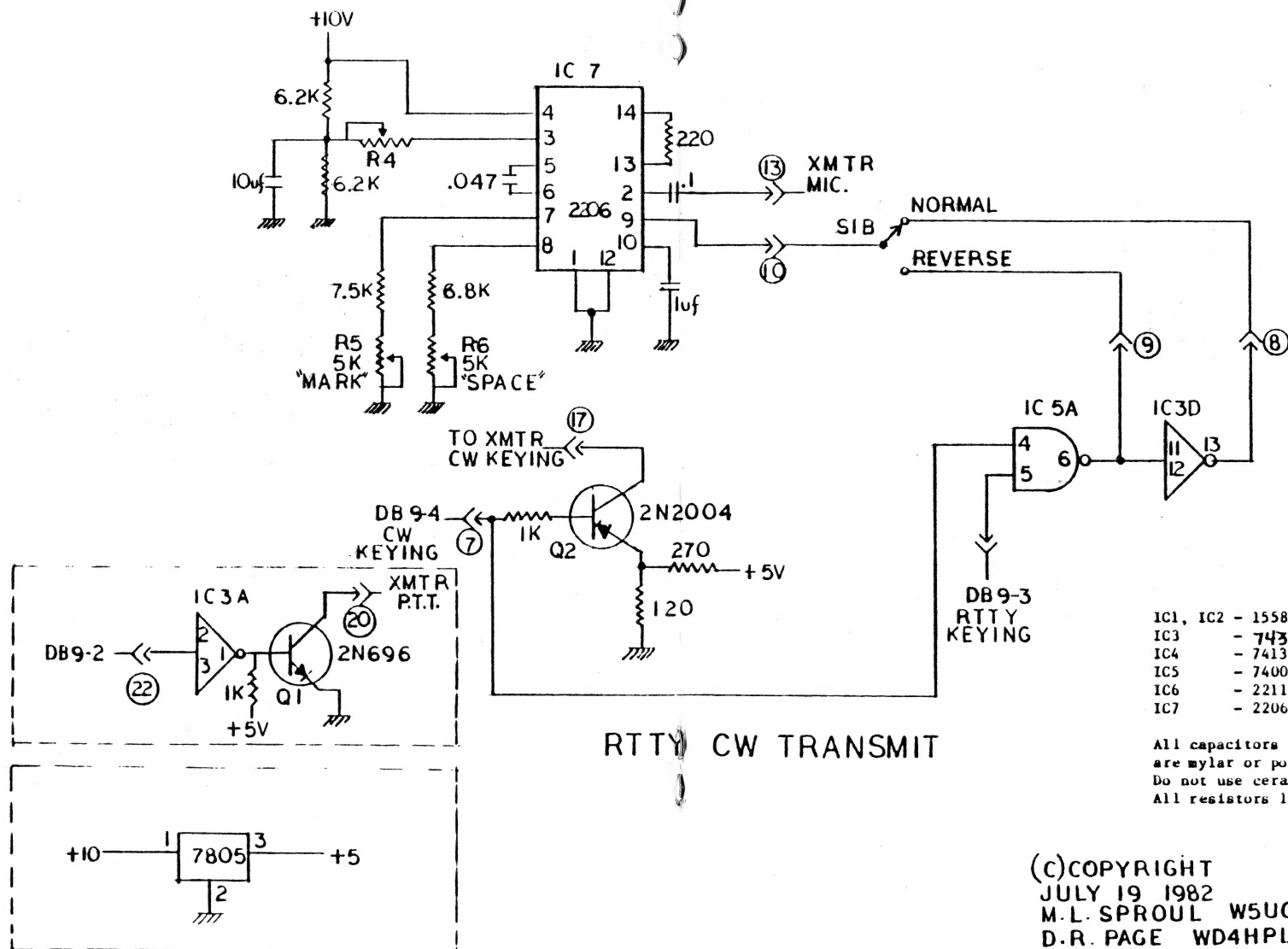


All capacitors less than 1mf  
are mylar or polystyrene.  
Do not use ceramic.  
All resistors 1/4 watt.



RECEIVED

(C) COPYRIGHT  
JULY 19 1982  
M.L. SPROUL W5UGQ  
D.R. PAGE WD4HPL





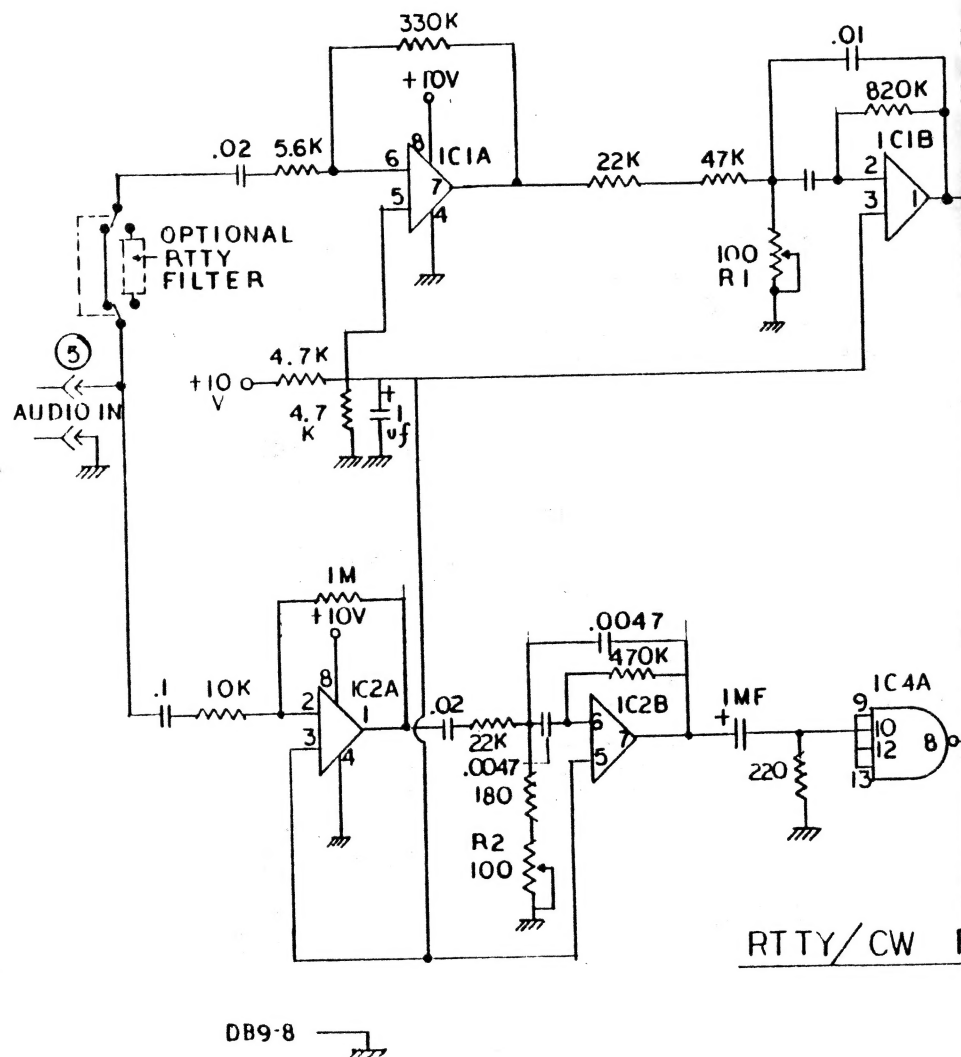
NEW RTTY SOFTWARE FROM MEMBER

Scott Persson, W80QPP, has informed me that he now has a RTTY ROM card for the ATARI that has many advanced features, including regeneration and loading files from tape or disk. The ROM is for RTTY only and the CW ID is Pre-Programmed into the ROM by Scott as each unit is ordered. For more information on this system and it's compatability with your TU, contact Scott at 4719 Valley Street, Omaha, Nebraska 68106

(Ed. Note) Scott told me that this is a very versatile Program, and the fact that it is produced by one of our own members makes it doubly interesting. I would appreciate a review of the Program and it's execution and application by one of the members who may purchase it from Scott. Scott also notes that he has a tape-based, limited application Program available for only \$12. JMc WDSBNC

OH NO! INCOMPATABILITY!

Gary, AASI, told me on the July 25th net that he has run into a Program entitled "Space Shuttle", which is a shuttle landing simulator, that DOES NOT LOAD FROM THE PERCOM DD DRIVE!!! It seems that the software company has decided to use a timing routine to Prevent Piracy of their Programs. The Problem with this is that the ATARI 810 drive uses a speed of 288 RPM while the Percom uses a more common 300 RPM. The software checks for the 288 RPM speed and if it does not see it, the Program will not load or crashes! The only way around that is to open the Percom drive and drop it's speed to 288 RPM! (Gary also notes, sadly, that this voids the warranty from Percom!) What a mess! The software vendors are becoming so Paranoid about Piracy that they are making it harder on themselves to market their own Programs! Now I suppose we will be seeing Programs for the ATARI in two different formats from some of these vendors! If you have run into this Problem I suggest that you scream at the top of your lungs at the vendor to stop this insane "escalation of Priacy Prevention". JMc



## INTERFACE CONTINUED...

12. Connect the output of the interface, RTTY/CW receive keying to the computer", to the computer interface input. In the case of the ATARI, connect the DB9 connector to Joystick Port 1.

13. Initialize the RTTY Program to receive Baudot at 45 baud (60 WPM).

14. Tune in a RTTY signal. The majority of the RTTY signals in the amateur bands are 45 baud Baudot. Observe the receive copy of the computer. If the received RTTY signal is strong and free of interference, tuned for maximum meter indication, the RTTY LED is flashing on in step with with the signal frequency shift, then the computer should be displaying understandable text. If not, make a small adjustment of R3 in either direction and note if any improvement in the text. This will set the 2211 to the correct operating point. If no improvement in the text is noted then:

- The signal may not be 45 baud or on the proper sideband- try another signal.
- If still no improvement, go to step 2 and start over.

### RTTY Transmit:

- Disconnect the interface from the computer.
- Apply +5 volts to IC5 Pins 4 and 5.
- Place S1 in the "NORMAL" position.
- Connect a frequency counter to IC7 Pin 2.
- Adjust R4 to mid-range.
- Adjust R5 for 2125 Hz.
- Place S1 in the "REVERSE" position.
- Adjust R6 to 2295 Hz.
- Switch S1 between the "NORMAL" and "REVERSE" positions and assure the frequency at IC7 Pin 2 is 2125 Hz in the "NORMAL" position and 2295 Hz in the "REVERSE" position.
- If unable to adjust the output frequency to the indicated values, recheck the wiring. When S1 is in the "NORMAL" position, IC7 Pin 9 should be at a logic "1" and at logic "0" with S1 in the "REVERSED" position.

11. Remove the +5 volts from IC5 Pins 4 and 5.

12. Connect the interface to the computer.

13. Connect the cable from the interface to the transmitter.

14. Connect the transmitter to a dummy load and tune up on the desired amateur band.

15. Place the transmitter in the lower sideband and PTT positions. NOTE: Do not use the VOX position as the output of the 2206 AFSK generator will not activate the VOX.

16. Initialize the computer Program for 45 baud baudot, transmit.

17. The transmitter should be activated by the PTT circuit in the interface.

18. Adjust R4 to set the audio level into the transmitter. The audio level must be adjusted to assure that the transmitter is operating within it's continuous duty Power input limitations.

**\*\*CAUTION\*\*** Excessive audio input level can lead to transmitter failure by exceeding the power dissipation rating of the final amplifier.

NOTE: Excessive audio input level from the interface can cause reduced carrier suppression, reduced unwanted sideband suppression, and spurious signals, all of which can lead to a citation from the FCC. In addition, you will have a terrible RTTY signal!

19. This completes the alignment of the RTTY portion of the interface.

### CW Receive:

The CW receive block does not require any adjustment for proper operation. Adjustment of the resistor on the input of the active filter will permit a small variation in the response frequency of the active filter to suit individual preference. Tuning of CW signals is critical as bandpass of the active filter is quite narrow. The LED in the CW output will follow the keying of the received signal.



## CW Transmit:

The control block for the transmitting of CW does not require any adjustment.

## Construction:

Construction of the interface is not critical. The interface can be constructed on Perf board using wire wrap or Point to Point wire and solder. A Power supply is not shown as a variety of wall charger type Power supplies can be used. For example, a wall charger type Power supply rated at 9 volts DC and 250 ma is currently being used. This supply has an output voltage of 10 volts when powering the interface. One word of caution when selecting Parts: All of the capacitors associated with the 2211, 2206, and 1458 must be either mylar or Polystyrene to assure stability of the circuits.

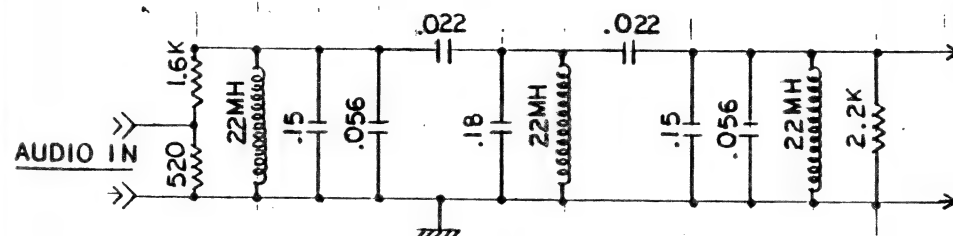
## Final notes:

The interface is being used with very good results with both RTTY and CW. The RTTY mode has been tested on the air using ASCII at 300 baud. The optional filter is recommended to provide better selectivity for RTTY reception.  
\*\*\*\*\*  
Editors Notes---

I received a letter from Don, WD4HPL with the above article. Don wants me to relay to all of the members of the ATARI Micro-Net that they are authorized to build this copyright protected circuit for their own use! Don also states that all of the components for this unit can be purchased new for less than \$55! An excellent value! Don is using the unit on an ATARI 400 with great results even though he has not installed the optional RTTY filter. Don also wishes to thank his Partner, Maury Sproul, W5UGQ, who spent many long hours in the development of this unit. I think we should all congratulate Don and Maury for their unselfishness by sharing this great development with us! JMc WD8BNG

## RTTY INTERFACE BOARD CONNECTOR CONNECTIONS

- 1 GND
- 2 BLANK
- 3 +10 VOLTS
- 4 BLANK
- 5 AUDIO IN
- 6 BLANK
- 7 CW FROM COMPUTER
- 8 RTTY KEYING (INVERTED)
- 9 RTTY KEYING (NORMAL)
- 10 RTTY KEYING TO 2206
- 11 METER
- 12 METER
- 13 AFSK TO XMTR
- 14 CW TO COMPUTER
- 15 RTTY KEYING FROM COMPUTER
- 16 BLANK
- 17 CW KEYING
- 18 RTTY FROM TU (NORMAL)
- 19 LED
- 20 RTTY TO XMTR
- 21 RTTY FROM TU (INVERTED)
- 22 PTT FROM COMPUTER



OPTIONAL RTTY  
FILTER

(c) COPYRIGHT  
JULY 19 1982  
M.L. SPROUL W5UGQ  
D.R. PAGE WD4HPL



# FOR SALE by MEMBER

Factory-sealed ATARI DOS II Master Diskette with manual. Only \$15.00. A great item for those who are using the Percom DD drive as their first drive or for those who want to upgrade their manuals from DOS I to the later version. Available from Randy Reese, WB4BZX, RFD # 5 Box 74-B, Bedford, Virginia 24523.

## NET LIBRARY!!!

Gary Sewell, AA5I, will be the official librarian for the net. Gary's address is 625 Valley View, Allen, Texas 75002. If you would like to donate Programs to the library, I'm sure that you fellow members would appreciate it! Gary will be handling all the transactions and if you would like to receive a copy of the library contents on a Printout, send him \$1 to cover the cost of the Printout and Postage. Since this is a high-volume venture, I'm sure you can appreciate the time and effort that is required to provide this service. Remember that for every Program that you donate to the library, Gary has to provide many copies to other members! Now let's get a huge library built-up! It will benefit all of us!

## ADDITIONAL MEMBER-SERVICES

DISKETTES : Single sided (but work on both sides on the 810 drive by Cutting out the write-Protect notch!). These are unmarked MEMOREX diskettes and are Prime, not seconds. They do not come with Paper sleeves or labels.

ONLY \$2 each---No Postage if you order 5 or more! Fifty cents of each diskette sale is put into the fund to improve "Ad Astra..." Add \$1 if you order less than 5 diskettes.

DISKETTE SLEEVES : I have found a supply of Plain white Paper diskette sleeves (warning labels are Printed on the reverse). These are provided to members for only 10 cents each! Send an SASE with enough Postage to cover the weight of the sleeves unless they are ordered with diskettes.

ZAPPER SAPPERS : We have aquired a small supply of GE MOVs that we can distribute to the members. These MOVs (Metal Oxide Varistors) are capable of shunting Power-line spikes of at least 900 volts. They are available to the members in two forms- RAW, which can be wired into your fuse/breaker Panel or across the Power leads of individual computer/ham equipment. We also have a small number of Plug-in types in which the gear can be Plugged into the unit (a modified Plug-adapter) and then the adapter is Plugged into the duplex outlet in your computer room/radio shack. This is the same type of unit that is sold in the computer magazines for \$29-\$35! The raw MOVs are only \$5 each and the Plug-in versions are \$10 each. VERY GOOD PROTECTION!

These products for the members are only available from:

THE ATARI MICROCOMPUTER NETWORK  
Jack McKingan II, WD8ENG  
4749 S.R. 207 N.E.  
Washington C.H., Ohio 43160

ITEM _____	QTY _____	TOTAL _____
ITEM _____	QTY _____	TOTAL _____
ITEM _____	QTY _____	TOTAL _____

TOTAL OF ORDER \_\_\_\_\_



# BEARING/DISTANCE PROGRAM

The followings program was obtained from the "ON-LINE" column in QST. It was submitted by GARY LIPPERT (K7VBY). It is a good bearing and distance program but can be added to to make it even better. First you can incorporate your own latitude and longitude into the program instead of inputting each time. Second you can provide for printer output and even use read & data statements to provide a list of commonly used locations. You can also add some better use of ATARI's graphics capabilities. I did all of these items and now have a very useful program. You might even think of some that I didn't.

```
10 REM DIRECTION FINDING PROGRAM. FORMULAS F
   ROM ARRL ANTENNA BOOK
20 DIM A$(10)
30 GRAPHICS 0
90 PRINT"ENTER THE FOLLOWING:";PRINT
100 PRINT" YOUR LATITUDE";INPUT A1
110 PRINT" YOUR LONGITUDE";INPUT L1
130 PRINT" OTHER LATITUDE";INPUT A2
140 IF A2=0 THEN A2=90
150 PRINT"OTHER LONGITUDE";INPUT L2
170 R=57.2958:A1=A1/R:A2=A2/R:L1=L1/R:L2=L2/R:
   REM CONVERT TO RADIANS
175 L=L1-L2:IF L=0 THEN GOTO 500:REM LONGITUDE
   S THE SAME
177 IF L>.14159 THEN L=L-.28318
178 IF L<-.14159 THEN L=L+.28318
180 T=COS(L)*(COS(A2)/SIN(A2)):T=ATN(T)
200 C=((COS(L)/SIN(L))*COS(A1+T))/SIN(T):C=ATN
   (1/C)
210 C=C*R:L=L*R:REM CONVERT TO DEGREES
220 IF L>0 AND C<0 THEN C=C+180
230 IF L<0 AND C>0 THEN C=C+180
240 IF L<0 AND C<0 THEN C=C+360
245 C=INT(C+.5)
250 PRINT:PRINT"CLOCKWISE BEARING FROM NORTH I
   S ";C
```

```
260 D=(SIN(A1)*SIN(A2))+(COS(A1)*COS(A2)*COS(L
   /R))
265 D=SQR(1-(D*D)):D:REM CONVERT COS TO TAN
270 IF L=L2 THEN GOTO 300
280 D=ATN(D)
285 D=D*R:IF D<0 AND D>-90 THEN D=D+180
290 D=D*.048:REM CONVERT DEG TO MILES
300 PRINT:PRINT"STATUE MILE DISTANCE IS ";INT(
   D+.5)
305 PRINT:PRINT"KILOMETER DISTANCE IS ";INT(D*
   1.6093)
310 PRINT:PRINT"ANOTHER CALCULATION (Y/N)";
320 INPUT A4:IF A4(1,1)="Y" THEN GOTO 30
400 END
500 IF A1>A2 THEN C=180:GOTO 250
510 IF A1<A2 THEN C=0:GOTO 250
600 IF A1>A2 THEN D=A1-A2:GOTO 285
610 IF A1<A2 THEN D=A2-A1:GOTO 285
```

Note: Use nesative values for southern la-  
titudes and eastern longitudes.

EARL GLINES-KC7DG

\* Editor's Note: We are all indebted to Earl for submitting this short program to us, and I would also like to acknowledge that Bill Zaner, WB6IYS, also submitted the same program. This program could be easily adapted to read in-memory data of city coordinates to produce a fantastic custom printout program for complete charts for a specific QTH. Used in combination with the APX "MAPWARE" program and a screen-dump to printer program, you could create the same great circle charts that are being sold in QST and other ham mags for \$5-\$7.

## ODDS & ENDS FROM THE NET

From Dave Hartman, KD8Z-----

During a recent visit to his local ATARI store, Dave had a new "Voice Box" voice synthesizer for the ATARI demonstrated to him. He says that this unit was not only comparable to the highly-touted "Vo-Max" unit, but actually was more intelligible! To top it off, it comes ready for the ATARI system and is complete with software for only \$160!!! Now that's a bargain! On top of that, the software driver can produce a graphic "mouth" on the screen of your monitor that moves with the sounds created by the "Voice Box"! Think of the possibilities for repeater or primary-station I.D., announcements, time/date records etc. etc.! Dave will be getting more information on this unit for the next issue of "Ad Astra...", so keep an eye open!

Mike Felack, WA3WOM, tells us that the Percom Double Density Drive is a real winner! He is very happy with his unit and is busy transferring his Programs to DD! If you have any information concerning this drive, you might drop me a line with a report of any experiences that members might want to be aware of.... Perhaps hidden features??!!

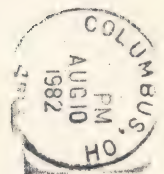
KANTRONICS' representative Mike Huslie, wishes me to remind all of our members who bought early versions of "HAMSOFT" ROM cards that have copyright dates earlier than MAY 1, 1982, that they may send them to Kantronics for immediate exchange. The latest ROM has a June 9, 1982 copyright date. Also, the latest manual from Kantronics for their hardware unit, "The Interface", has a complete schematic of the unit plus a few tips that might be of help to fellows with "problem transmitters" (high or negative CW keying voltages present).

## Review

I have just received a fantastic program from David Young, one of the most talented of the ATARI Programmers, and one who knows the ATARI disk system totally. His latest Program is called DISKSCAN and it is really a combination of Programs that have a variety of uses. Upon booting the disk, you can access a couple of sector scanning Programs, a disassembler, a mini assembler, an editor... ect. They are all used to scan and modify individual sectors on a disk. In addition, specific groups of sectors can be looked at, sectors can be followed numerically, or by sector-linking as would be the case in many Protected Programs. You can toggle between HEX and character modes, depending on which might be easier for you to follow at any point. There is really too much for me to cover here in the space we have available. I suggest that you investigate the purchase of this Program and give it some serious thought. David only wants \$30 for the disk, and it is well worth it! I should mention that on the flip-side are duplicates of the main Program PLUS a self-executing demo that is full of ideas on using the DISKSCAN system (yes, I called it a system because it is so complete!). Also worth mentioning is the documentation. There is no hard-copy with the disk, but using the "C" option in DOS you can dump a whole seven pages to your printer to use as a reference. The Programs are menu-driven and super EASY to use and follow. As a bonus, Dave throws in his fabulous CARTCOPY Program which does just that, it will duplicate your ROM cartridges onto disk as a file! (One word, ATARI has recently revised some of their cartridges to check RAM for Program contents. If there is one, it will cause the ROM copy to bomb out!)

Dave's address is: 421 Hanbee, Richardson, TX 75080. Try it, you'll like it!!! JMc WD8BNG

THE FTTHRI MICROCOMPUTER NETWORK  
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Robert M. Likan



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Membership roster current as of August 7, 1982:

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Bill Zaner WB6IYS  
Ron Berger NE6T  
Dave Krick K8FJ  
C.T. Ashley AA4A/8  
Stephen Lewis WB7TFZ  
Jeff Wilkes W4NFA  
Jack Whitmer  
Sheldon Leemon N8SL  
Ali Yashruti  
Robert Grundner K1RPC  
Gary Sewell AA5I  
Ed Stephenson AB4S  
Don Moon N6FTR  
Phil Salas AD5X  
Tom Rice WB6BYH  
Bob Lambeck WDSINT  
Howie Goldstein N2WX  
Ken Heneley WA0ZCA  
Earl Glines KC7DG  
Cam Whetstone WA3YOH  
Sherman Hart W5BLB  
Mike Pars KA3HLS  
Bill Janovsky KG2L  
Dick Lee W9NVU  
David B. Flinker WB4JUG  
Bill Reed WD0ETZ  
Bill Spires KB9UR  
Hugh H. May Sr. WA4KLQ  
Ted Tarantino KB7DB  
Mario Schurmann WA7SKV  
Doug Seyler WB5TKI  
Gary Smith KA1J  
Leo Kleiman W6KGP  
Jon Stewart  
Ed Reynolds WB3ERE  
Stan HorzePa WA1LOU  
Bill Randolph W8VFT  
Carl Walls N5DXV  
Ray Gyger II KX5Z  
Walt Du Bose K5YFW  
Al Kruhm K2BSM  
Stan Owens W2MT  
Lou Williams WA8VWM  
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Pete Inskeep N1ABB  
William Gilroy WB2LFV  
Ray Conway W6WNA  
Johnnie Spotts W6HTY  
Martin Schick KA4ING

Randy Asee WB4BZX  
Dennis Erickson WA9FBC  
Ron Kolmodin K9OUU  
Don Page WD4HPL  
William Jones K7DS  
David Voit WB6TOU  
Bruce Crawford WA3WUL  
Jerry Ragland WA8BOB  
Alan Orr  
R.C. Beckett W9OE  
John Sherman K1GTE  
Hal Adkins  
Lorin Hollander WA1PGB/2  
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Ken Gray KC8EL  
Lee McPherron KC8JS  
Rev. John Tucker WD0BHU  
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Oscar Staudt WB5GCX  
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Allen L. Pomerance WA9SUG  
Mike Felack WA3WOM  
Scott Persson WB0QPP  
Alan Forney WB4ZKX  
M/Sgt. Gerald Kaplan KL7IFR  
Dave Bastress K3GAU  
Paul Gilka WD4BIT  
Dave Hartman KD8Z  
Matt Wald KA8CGE  
John Adams KC5FW  
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Bob Martinson N0AFY  
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Larry Mosier W9SWM  
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Alan Flaten KD4DB  
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George Foehringer WB3IDU  
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Arthur Nelson WA6SWK  
Duane Olexa WD8DYF  
Mike Caswell WA8ARS  
Ed Steeble K3IXD  
Jim Lamb KD6QM  
Keith Savoy WD4PSO  
Dick Raymond WA7CTY  
Greg Hodson K7KJM

#### ADDITIONAL NOTES!!!

RTTY frequency: It is suggested that net members who may wish to contact each other on an informal basis, monitor 14.085 or 14.087 for RTTY QSOs. We don't have any official net set up on those frequencies, but if anyone would like to be the net manager, drop me a line with your ideas on implementing a RTTY net, and I'll be happy to send you a net manager's Package.

Please note that at present, I plan to produce "Ad Astra..." every two months, and that this issue, VOL I # 3, is actually the September-October issue. I will be putting month-year info on the billboard of future issues. Also, with any luck, next issue will have a different cover! (Economics, you know!)

The net is growing tremendously. I've had a couple of fellows tell me that they were ready to sell their Ataris because they didn't know that a ham-users' group existed and were involved in ham-radio applications for the Atari! Indeed, we have been somewhat forgotten by the manufacturers and software houses in the past, but that is all behind us... we are being heard and there are some responsive companies out there who care about us! If you find a product that you feel does justice to your system and needs, let them know that you appreciate it and encourage them to continue their developments. Let me know about your experiences too, good or bad... we want to spread the word in any case.

It is up to ALL of you to let your fellow ATARI/HAMS know about the net! When you are at a hamfest, computerfest or local users' group meeting, you might preach the gospel of the net to all that will hear! At a later date we may be able to provide patches or some other identifying insignia to the members to help them recognize each other at these events. (First we have to get an emblem designed--- any ideas?) This would be great on QSL cards too!

There is a coupon enclosed in this issue of "Ad Astra..." good for a 10% discount on any MOSAIC product. If you are thinking about memory expansion, this would be a good opportunity for you! They have a great line of expansion boards, including a new one that will give the '400 a 64K RAM capability that can be totally addressed with a few BASIC commands! Write to them or see your local dealer for information on this development!

That all the room this time! See you all on the net! 73, Jack



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